

PHOTO BY CARL DAHLEN

MANAGING THE BULL PEN

Off-season no time to slouch on bull care.

by Shauna Hermel, editor

Winter is not the time to forget about the care and management of your bull battery, warns Kacie McCarthy of the University of Nebraska-Lincoln (UNL). Preparation for the next breeding season should begin the day you pull the bulls from the pasture.

During a December UNL BeefWatch webinar, the beef cow-calf specialist discussed the importance of the bull to a successful breeding season, winter nutrition considerations, cold weather effects on fertility, and preparing for the next breeding season.

Nearly all U.S. cow-calf operations (95.7%) rely on the natural service of a bull to get females bred, McCarthy observes, citing the USDA's National Animal Health Monitoring System (NAHMS) Beef 2007-2008 study.

The NAHMS Beef 2017 study just released shows an uptick in the number of heifers (from 12.4%

to 15.1%) and the number of cows (from 4.1% to 5.5%) exposed to both artificial insemination (AI) and natural service, but bulls still cover 91.9% of the heifers and 98.4% of the cows.

Bulls work hard during breeding season, and some work harder than others. North Dakota research by Carl Dahlen and

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Charles Stoltenow in 2015 indicated bulls turned out in multisire pastures may cover from 4 to 80 females during the course of a breeding season. Which end of the spectrum they're on depends on libido, social dominance, health and a host of other factors.

"We have some bulls that are going to do a lot more work, and those bulls ultimately are going to be those thinner bulls coming off of that breeding season," says McCarthy. Weight loss during a breeding season can be 100 pounds (lb.) to 400 lb.

"We're losing one to two body conditions depending on the age and maturity of those bulls," she says. Of special concern are the younger bulls that are still growing.

Off-season nutrition

"We need to get those bulls back into a body weight or body condition for that subsequent

breeding season," she says. To do that, it's important to evaluate bulls as they come out of the breeding pasture. Thinner and younger bulls may need to be separated from more mature or dominant bulls to allow them to grow and/or regain their condition to perform at their best the next season.

Those younger bulls that are still growing and need to regain what they lost will need to gain 1½ lb.-2 lb. per day to be ready for turnout the following April, she says.

McCarthy shared Table 1 as a base for providing the energy and protein needs of bulls at varying levels of gain for varying weight classes.

For a yearling bull weighing 1,400 lb., says McCarthy, "if we're trying to target a diet that's roughly 2% of body weight, then that bull would need to consume about 28 pounds of dry matter (DM), which targets about 64% TDN (total digestible nutrients) on a dry-matter basis for energy and trying to meet about 8% crude protein (CP) in that diet."

McCarthy suggests adding a grain source, such as corn or distillers' grains, to increase the CP to 9% to help with gains for growing bulls.

"We can recommend anywhere from 3 to 6 pounds, depending on the grain product," she says, noting the amount can be adjusted depending on targeted gains. "How much time we have before that next breeding season will be important."

On the other side of the spectrum, mature bulls may just need to maintain body condition until the next breeding season. A 2,000-lb. bull at a body condition score (BCS) of 5-6 is going to require a DM intake of 30 lb.-31 lb. per day to maintain weight through the winter season.

On schedule

To help producers think through the reconditioning process after breeding season, McCarthy shares a practical scenario: A yearling bull is turned in with cows in April weighing 1,200 lb. at a BCS of 5. Left with the cows for a 90-day breeding season, he is removed in early July weighing 900 lb. at a BCS of 3. You have roughly 270 days to prepare him for April turnout for the next breeding season.

Producers can take advantage of some better forage during the summer and moving into fall to help bulls add weight and regain condition, she says. Fall harvest ushers in the opportunity to use corn residues for a winter grazing and supplement strategy.

"This is an opportunity, especially here in Nebraska, where we can use some of these resources like our corn residue and our distillers', which is a great energy and protein source, to help supplement these guys prior to that breeding season," McCarthy observes.

"Once we hit winter, [that] October time point, we have roughly 120 to 200 days, depending on the start of the next breeding season," she says. "Our target for 2-year-old bulls is roughly about 75% of their mature

Table 1: Nutrient requirements of bulls at varying levels of gain

Body wt., lb.	ADG, lb./day	Dry-matter intake, lb.	TDN, %DM	CP (%DM)
1,200	1.0	25	56	7.8
1,200	2.0	26	63	8.4
1,400	1.0	27	56	7.5
1,400	2.0	28	64	8.0
1,600	0.0	27	48	6.9
1,600	1.0	30	56	7.3
1,800	0.0	29	48	6.8
1,800	0.5	31	52	7.0
2,000	0.0	31	48	6.8

ADG = average daily gain; TDN = total digestible nutrients; DM = dry matter; CP = crude protein.

SOURCE: Wilbank and Parish, 1986.

Table 2: Effect of severity of frostbite on semen quality in bulls

Soundness score	Severity of frostbite		
	Mild	Moderate	Severe
Satisfactory, %	89.5	48.0	2.1
Questionable, %	9.5	25.3	9.2
Unsatisfactory, %	1.0	26.7	88.7

body weight as a 2-year-old."

Don't forget to put out the mineral, McCarthy reminds. "It will be pretty critical for these bulls, especially when we think about growth and performance, reproductive performance and ultimately sperm production."

Selenium (Se) is critical for normal spermatogenesis, she explains. Zinc is important for sperm-cell plasma membrane integrity, tail morphology and sperm motility. Iodine has been shown to help alleviate foot rot, which can affect semen quality, as well as the bull's physical ability to breed.

Cold-weather care

Winter brings a bite of its own — the cold. Freezing temperatures and wind chill can result in infertility if bulls are not protected.

Frostbite on the scrotum can cause blistering, which will ultimately discolor and scab over, says McCarthy. Severe cases could cause sloughing of the lower section of the scrotum.

"If we have tissue damage, we need to keep in mind that spermatogenesis is going to take upwards of 61 days," she explains. "So we need to be able to give these bulls plenty of time to work on regenerating new sperm cells

for that next breeding season."

Conducting a breeding soundness exam (sometimes referred to as a BSE) 45-60 days after the injury can help determine if those bulls will be fertile enough to move into the next breeding season.

Research looking at the effect or severity of frostbite on semen quality in bulls shows a clear relationship between the severity of the injury and subsequent breeding soundness results (see Table 2), says McCarthy.

It's not just about passing or failing the semen test. Semen quality affects pregnancy rates.

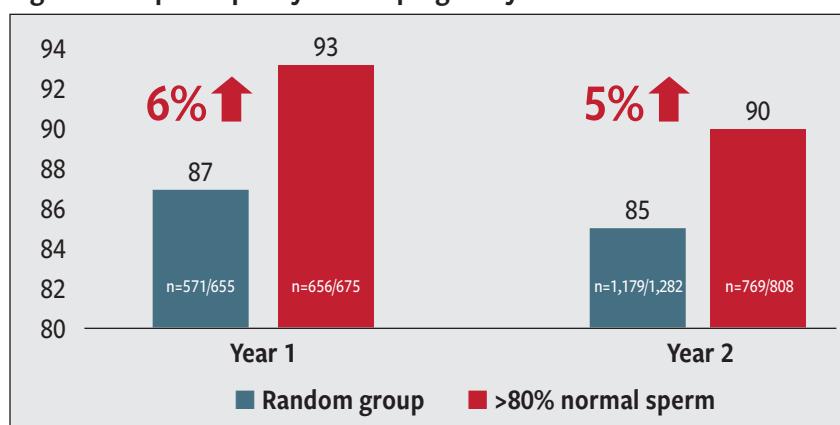
She cites research by Wiltbank and Parish comparing pregnancy rates of cows exposed to bulls scoring greater than 80% normal sperm in a breeding soundness exam to pregnancy rates of cows exposed to a random selection of bulls. Their two-year study indicated that by selecting for semen quality, they could increase pregnancy rates 5-6 percentage points (see Fig. 1).

"We generally would recommend if you have a bull, retesting before that next breeding season to make sure that they're still within satisfactory levels for semen quality and motility," McCarthy says. Not doing so is a missed opportunity to safeguard your herd's reproductive performance.

Prebreeding exam

A breeding soundness exam is a
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Fig. 1: How sperm quality affects pregnancy rate



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uniform method of assessing a bull's likelihood to establish pregnancy in an appropriate number of open females that are cycling and healthy within a defined breeding season, McCarthy explains. The exam includes four components — a physical exam, measurement of scrotal circumference, and evaluation of sperm motility and sperm morphology.

The physical exam should include scrutiny of the feet, legs, eyes and sheath, as well as palpation of the reproductive organs, she says. Bulls must meet minimum scrotal requirements, depending on their age and breed.

Evaluation of the bull's semen to assess sperm motility and sperm morphology provides the opportunity to find those subfertile or injured bulls that could negatively affect pregnancy rates.

If a bull is declared unsatisfactory, failing the exam, a producer may want to consider the

reason for failure. If the bull was sick or suffered a mild case of frostbite, giving him the 61 days for spermatogenesis and retesting may yield a different result.

Doing a breeding soundness exam 30-60 days prior to the breeding season will help ensure those bulls are ready to go, McCarthy says.

Management details

While you have bulls in the chute for the breeding soundness exam, make sure they get their prebreeding vaccinations, McCarthy says. It's also an opportunity to control lice and flies, as well as to check feet and legs to make sure the bulls are able to get out and navigate breeding pastures.

If you're commingling bulls from different breeding pastures, be sure to allow plenty of room for them to establish their social dominance, says McCarthy. "These guys are



PHOTO BY SHAUNA HERMEL

Bulls should be protected from severe cold so they can perform well when the time comes. Kacie McCarthy recommends windbreaks and bedding to prevent frostbite and conserve energy.

going to start headbutting. They need a lot of room to move."

To prevent injury while the bulls are establishing their pecking order, remove any unnecessary extra objects in those pens or pastures, she advises. If you know what bulls will go to pasture together for breeding, mixing them during the off-season and

managing them together will give them time to sort out their differences and recover from any scuffling injuries before they go to work.

One of the keys to managing bulls through the winter is protecting them from the severe cold, says McCarthy. Use windbreaks to lessen the wind chill and bedding to get bulls and their scrotums up off the cold ground. Doing so will help prevent frostbite and conserve energy for maintenance and growth by maintaining body heat.

"Bulls are an investment," McCarthy concludes. "When you think 50% of your genetics are coming from a select number of bulls in your bull battery, they're a big investment. So how do we manage them?" ■

Editor's note: To access this webinar and others in the BeefWatch webinar series, go to <https://beef.unl.edu/beefwatch-webinar-series>.